

# PROCEEDINGS

## AMERICAN SOCIETY OF CIVIL ENGINEERS

NOVEMBER, 1955



### LOCAL GOVERNMENT IN THE ATOMIC AGE

by Harold F. Alderfer

#### CITY PLANNING DIVISION

*{Discussion open until March 1, 1956}*

*Copyright 1955 by the AMERICAN SOCIETY OF CIVIL ENGINEERS  
Printed in the United States of America*

**Headquarters of the Society**  
33 W. 39th St.  
New York 18, N. Y.

PRICE \$0.50 PER COPY

This paper is one of a group given at Lehigh University and Lafayette College at Bethlehem and Easton, Pa., on October 22, 1954, at a special program of the City Planning Division in conjunction with the Lehigh Valley Section. It was designed to bring out the relationship between future commercial applications of the use of atomic fuel for developing power and city and regional planning.

The following papers comprise the program: "Elementary Principles of Nuclear Power" (Proc. Paper 768) by John W. Landis, Customer Relations, Atomic Energy Div., The Babcock and Wilcox Co., New York, N. Y.; "Prospects for Use of Nuclear Power" (Proc. Paper 767) by H. W. Huntley, Member, Atomic Power Study, General Electric Co., Schenectady, N. Y.; "Impact of Atomic Development on Growth and Planning of Urban Regions" (Proc. Paper 832) by Park H. Martin, M. ASCE, Executive Director, Allegheny Conference on Community Development, Pittsburgh, Pa.; "Environmental Considerations in the Development of the Atomic Energy Industry" (Proc. Paper 766) by Arthur E. Gorman, M. ASCE, Sanitary Engineer, U.S. Atomic Energy Commission, Washington, D. C.; and "Local Government in the Atomic Age" (Proc. Paper 833) by Harold A. Alderfer, Prof. of Political Science, Penn State Univ., State College, Pa.

These papers presented, first, the methods by which nuclear energy could be converted into power, reviewed the prospects for such power, and then took up: the effect that such atomic plants and the power which they would create might have on the future planning of metropolitan areas, the ways in which the public health might be protected against any harmful wastes, and, finally, the revisions in governmental structure that might be desirable as a result of the atomic age.

They pointed out that careful consideration should be given to site selection, both in consideration of adjoining developments and to assure safe disposal of radioactive wastes. Assurance was given that safe designs are within the realm of sound engineering. At the same time, it was pointed out that the potential new industry presents a challenge not only to engineers but to other scientists, private management, and public officials involved.

Reprints from this publication may be made on condition that the full title of paper, name of author, page reference (or paper number), and date of publication by the Society are given.

The Society is not responsible for any statement made or opinion expressed in its publications.

This paper was published at 1745 S. State Street, Ann Arbor, Mich., by the American Society of Civil Engineers. Editorial and General Offices are at 33 West Thirty-ninth Street, New York 18, N.Y.

## LOCAL GOVERNMENT IN THE ATOMIC AGE<sup>1</sup>

Harold F. Alderfer<sup>2</sup>

The 1950 Census showed that sixty-five per cent of the population of the United States lived in urban areas. Three main trends of post-war migration were indicated. First, Americans were moving from rural areas to cities in greater numbers than ever before. Second, the movement from central city to the suburbs has been almost as great. Third, there has been heavy migration into the border states, especially in the Southwest. Nearly half the gain in population in continental United States was registered in the suburbs of the 168 standard metropolitan areas as delineated by the 1950 census. While the central cities gained 6 million people between 1940 and 1950, the suburban areas gained 9 million. Central cities now have a population of 49 million people, the outlying parts of metropolitan areas have 35 million.

We are entering the atomic age at a time when the population of urban areas has already begun to disperse itself beyond the confines of the central cities. This represents a final parting of the ways from the urban pattern of the steam age in which congestion and slums were characteristic. While the advent of electricity and the motor age had begun to loosen up concentration, little progress had been made before World War II. Now at the dawn of the atomic age this movement increases in tempo and volume. It will undoubtedly reach major proportions, spurred on primarily by the fear of atomic attack and secondarily perhaps by the utilization of cheap atomic industrial power.

The movement outward from the central cities, unplanned as it has been, has had dire consequences for the central cities. People, industry and business have gravitated toward the fringes because land was cheaper and taxes lower, and because the motor vehicle was now coming of age as a means of intra-metropolitan traffic. Central cities, because they could not provide easy access and free parking, lost a large share of their retail trade. Blighted areas around the central business districts degenerated into slums. Its buildings became fire hazards and health menaces. Crime rates zoomed to the proportions of a national problem. Human jungles grew up right in the heart of the central cities. As a result, city government today costs more, real estate values are declining and business looks for better locations. Yet the central city is still the core of the entire community and each morning thousands of automobiles choke the thoroughfares with traffic. Both the physical and the psychological impact of this kind of life on urban dwellers is harsh. The important point is that the danger of atomic attack only increases the strain on people that was already there, and that the natural reactions to this new danger merely accentuate the outward movement that had already

1. Paper given at a meeting of the City Planning Division of the American Society of Civil Engineers on the general subject Relationship Between the Application of Atomic Fuel for Commercial Power and Regional Planning held at Lehigh University and Lafayette College, October 22, 1954.
2. Executive Secretary, Inst. of Local Government, The Pennsylvania State Univ., State College, Pa.

begun before we entered the atomic age. No new thing is added, but a long term trend is stepped up by new impulses.

Outside the city, fringe areas are facing problems, too. There are too many small independent and relatively poor local units. The Bureau of the Census reported in 1952 that in the standard metropolitan area of Philadelphia there were, exclusive of school districts, 369 local units; there were 320 in the Pittsburgh area, 613 in the New York-New Jersey area, 93 in the Allentown-Bethlehem-Easton area, 42 in the Erie area, 77 in the Harrisburg area, 113 in the Johnstown area, 74 in the Wilkes-Barre-Hazleton area—and so on. In every American metropolitan area today, there is vast governmental confusion.

Unincorporated areas, rural townships and county governments cannot or do not, except in rare instances, provide the governmental services that an urban population requires. They have neither the tax resources, personnel or organization to provide them. The incorporated places—the boroughs, towns and satellite cities—especially the smaller and poorer ones—cannot do the job either. Except in those units of government in which there are high valuations in real estate—where high-priced residential properties or industrial establishments exist—there is not enough money to provide adequate urban services, there is not enough trained personnel to do an efficient job. The suburban householders' dream of low taxes and political independence often vanishes in the fervent quest for water, sewage facilities, police and fire protection and adequate schools. In these places, new and costly buildings and installations are required but the meagre resources of small units cannot finance them. In middle class and low income sections, unpaved streets, outdoor plumbing, health nuisances, jerry-built housing and overcrowded school rooms often belie the promise of American suburban life. Now if this be true for ordinary local government services, how much more difficult will it be to get those things done that are necessary to reduce urban vulnerability in case of atomic attack, and to adjust to the peacetime uses of nuclear energy.

So a primary urban need is the creation of metropolitan government that is adequate for the demands of the modern day. This task is not for the dreamer anymore than it is for the arch conservative. It calls for forthright, hard-boiled logic and constructive imagination guided by facts. There are three objectives: the first, to find a functioning governmental unity for the entire metropolitan area that is the natural economic community; the second, to provide for modern, efficient administration; and the third, to preserve local control and democratic action.

How can this be done? As we were developing from a rural to an urban nation, American cities tried in a number of ways to keep local government abreast with urban growth. These methods were not entirely failures, nor were they complete successes. But it is safe to say that they have not answered the need, nor have they provided the ultimate solution. That is yet to come. But come it must and quickly or else there will be further governmental chaos. State and national governments will step in and take over in behalf of the urban dwellers who now constitute two-thirds of the nation and whose cry for services will be heeded.

What methods to achieve metropolitan unity have been already tried. The first and oldest is annexation. Current interest in annexation as the means to obtain governmental unity is waning—once it was the only one at hand. Annexation is generally opposed by the fringe dwellers who will fight for their hard-won political independence; nor is it always profitable to the central

city which must supply many installations and services that cannot be paid by the meagre revenues derived from the new areas. But annexation is not dead; indeed there have been some recent large-scale annexations, notably in Seattle, San Antonio and Pasadena. In Pennsylvania alone there were 190 annexations within the 1940-48 period; they were sought for such practical purposes as water supply, sewage disposal, police and fire protection.

Another method is for the central city to provide the fringe areas with governmental services. Contracts are drawn between the central cities and the outlying governments or residents to provide such services. Still another trend is to give governmental powers such as zoning, subdivision control, regulation of building and sanitation in the outlying areas to the central city, but these methods are either cumbersome, makeshift or unsatisfactory. They do not fit the bill.

Still another experiment leading to metropolitan unity has been the special district, often called "municipal authority," which is composed of a number of local units joined together to provide specific governmental services to metropolitan areas. Representation on the governing body is given to each of the participating units. The necessary facilities are constructed and financed by bonds issued by the special district and backed up by the revenues from the operation of the specific improvement. Such districts, large and small, are becoming more numerous with each passing year. Many of them have been highly successful. The Metropolitan Water Commission of Southern California serves a population of three and one half million including Los Angeles. The Hartford Metropolitan District serves the City of Hartford and adjacent towns with water, sewerage and regional planning. The Sanitary District of Chicago serves four million people—67 cities and villages, and 16 townships, protecting water from pollution, constructing canals, sewers, and sewerage treatment works. The Port of New York Authority is the best known of all metropolitan authorities and its accomplishment need no repetition here.

A metropolitan district or authority for the specific purpose of civil defense itself may not be too visionary. In fact, the present muddled state of civil defense organization now points to the need for a regional organization rather than one for the central city alone. But in this field, the municipal authority has not yet achieved the status of a local unit of government. Why not a local authority with specific powers in civil defense within an entire metropolitan area? Such an authority should be given power to require co-operation of the existing local units in fire protection, police protection, evacuation plans, and other functions. One might ask: But why take civil defense away from the municipal government? The answer might well be: Municipal officials do not have the time to do the job required without neglecting their ordinary duties. Civil defense requires a specially trained organization. If this atomic threat is long term, a permanent, long term organization is necessary to meet it.

There are some examples where the county has taken on urban functions that cover an entire metropolitan area within the county. Such an arrangement might work in civil defense if proper organization and powers were given to the county. But the county as a local unit has not yet demonstrated the flexibility and administrative competence to take on new and complex urban services, no matter what its theoretical or geographical advantages might be.

The most far-reaching suggestion yet put forward to solve the government problem in metropolitan areas is the federation of local units. Under such an arrangement a new local unit, the federated municipality, would be

established. It would consist of the central city and the outlying local units of the whole metropolitan area. This federated municipality would be given certain specific powers and functions, the local units would keep those functions which they could best administer.

The idea of metropolitan federation is now new. Proposals for a federated metropolis were defeated for Pittsburgh, St. Louis, Miami and Oakland during the past forty years, but the idea of federation of metropolitan government is steadily gaining ground. Professor Victor Jones, an authority on metropolitan problems, speaking about ultimate solutions, says: "I doubt that any proposal has much chance of success unless it is based upon the 'federal principle' of allocating metropolitan functions to a metropolitan government and leaving other functions to less-than-metropolitan governments." Although established in London and other European places, the first adoption in the western hemisphere was in 1954 in Toronto, Canada. The Municipality of Metropolitan Toronto in which the City of Toronto and twelve suburban units of government are now merged will take over the supply and wholesale distribution of water to the local municipalities, operate truck sewers and sewage treatment plants, establish a metropolitan roads system, develop a program of land-use planning and supervise local planning, and assume final authority for public transportation services. It has sole authority over new indebtedness for all units in the area of the new metropolis. The twelve suburban municipalities are separated from the county and its functions including administration of justice and some welfare responsibilities will be taken over by the federated unit. Concurrently with its member units, the new municipality may undertake municipal housing and redevelopment, and also has power to develop parks and recreation areas. The local units will keep their remaining present functions.

The jurisdiction of the over-all government covers 245 square miles with a total population of 1,200,000—almost twice the number of Toronto proper. The Metropolitan Council has twenty-five members including the mayors or reeves of the suburban communities and twelve representatives from the City of Toronto including the mayor, two of the four elective controllers, and one of the two aldermen from the nine wards of the city. The chairman is appointed by the provincial government. In addition, there is also a metropolitan school board similarly elected.

Thomas H. Reed, long time authority and practitioner in the field of metropolitan government, believes little progress toward final solution of the metropolitan problem has been made since 1925. Drastic surgery on the present corpus of local government is necessary. For a complete cure, he says, many cities, counties, towns and villages must be eliminated as entities and in their place must be one single urban government. The public has not yet adopted a realistic conception of the present-day city. It sees it as a compact and closely knit urban area, but in reality it is a sprawling macropolis of built-up and open spaces extending miles from the central core. While there is little movement toward complete consolidation at present, Mr. Reed believes that palliatives should not be used for they prolong the ultimate solution and confuse the real problems. But there are steps to be taken short of complete consolidation as, for instance, metropolitan federation which was adopted by Toronto, and functional consolidation giving increased powers to the county in zoning, building regulation and planning. Above all, there is the need to foster a feeling of unity within the entire metropolitan area. This will ultimately bring about the urge to make the necessary improvements.

Some of the conclusions that came out of Project East River indicate the kind of thinking on these problems that is going on in official circles concerned with national defense. This Project was jointly undertaken by the Department of Defense, the Federal Civil Defense Administration and the National Security Resources Board under the direction of General Otto Nelson in a two year task to determine the optimum combination of non-military measures necessary to reduce urban vulnerability in case of atomic attack, and to provide for national defense.

The report stated that one of the basic hindrances to urban progress was that real estate taxes were still the main sources of urban revenue and as a result, a one hundred per cent utilization of land sites in urban areas is necessary. Concentration of high property values in the central city must continue if urban services are to be financed as they are now. This constitutes a great deterrent to low density coverage within an urban area for taxes will not yield enough money to pay for the services required. Natural dispersion is therefore slowed down or blocked.

Another problem pointed up by the report was that of worker transportation in relation to intensity of land use. Arterial and circumferential highways are too few, too little has yet been done to improve home-to-work and work-to-home transportation.

The need for the speedy elimination of slums around the central business area was emphasized both because they were most vulnerable and provided a fire hazard of extreme danger to the entire urban area and because their presence hindered the development of the urban areas as a whole. The report stressed a need for urban surgery. To reduce atomic vulnerability, it concluded, slums must go. In dealing with slums, cities are offered liberal assistance under present federal redevelopment legislation.

The detailed mapping of fire storm areas was another recommendation. A fire storm area is one in which inflammable buildings cover twenty per cent or more of the land in an area of at least one square mile.

East River Project concluded also that programs which would look forward to the better spacing of industry should be developed in order to provide better protection against atomic attack.

And finally, the provision of adequate local government for the entire metropolitan area to insure smooth administration of all local services in the interest of safety in case of war was deemed of prime importance.

These recommendations speak for themselves; they need no belaboring. But to achieve such objectives in each metropolitan area requires detailed study, comprehensive planning on the local level, and a high level of community statesmanship. Under the hammer of atomic danger, these things can be done and in so doing urban areas will also be getting ready for the atomic age in peace time.

Will the coming of atomic power basically change the American city? To answer this question properly we must inquire first into the application of atomic energy to industrial uses. Authorities like Walter Isard and Vincent Whitney, authors of Atomic Power, An Economic and Social Analysis (1952) give the impression that nuclear energy if added to present power resources will not radically change urban life but will merely stimulate urban trends already under way. Experts take for granted that atomic power will in due time be available to industry at competitive prices. But it must be remembered that while a small amount of material theoretically capable of supplying tens of thousands kilowatt hours of electric energy can be transported to any place at little cost, that to supply industrial energy a large capital

investment is needed. There is no inherent difference between arrangements to make use of heat from a nuclear reactor and from any coal burning furnace. Large scale power plants, atomic shields and complex and expensive machinery are required. So nuclear energy will be made available to industry only when political and economic considerations justify the heavy capital investments required and will be forced to compete with present power sources such as coal and hydroelectric. It will take a dominant place only when other power is relatively high in cost or in danger of becoming exhausted.

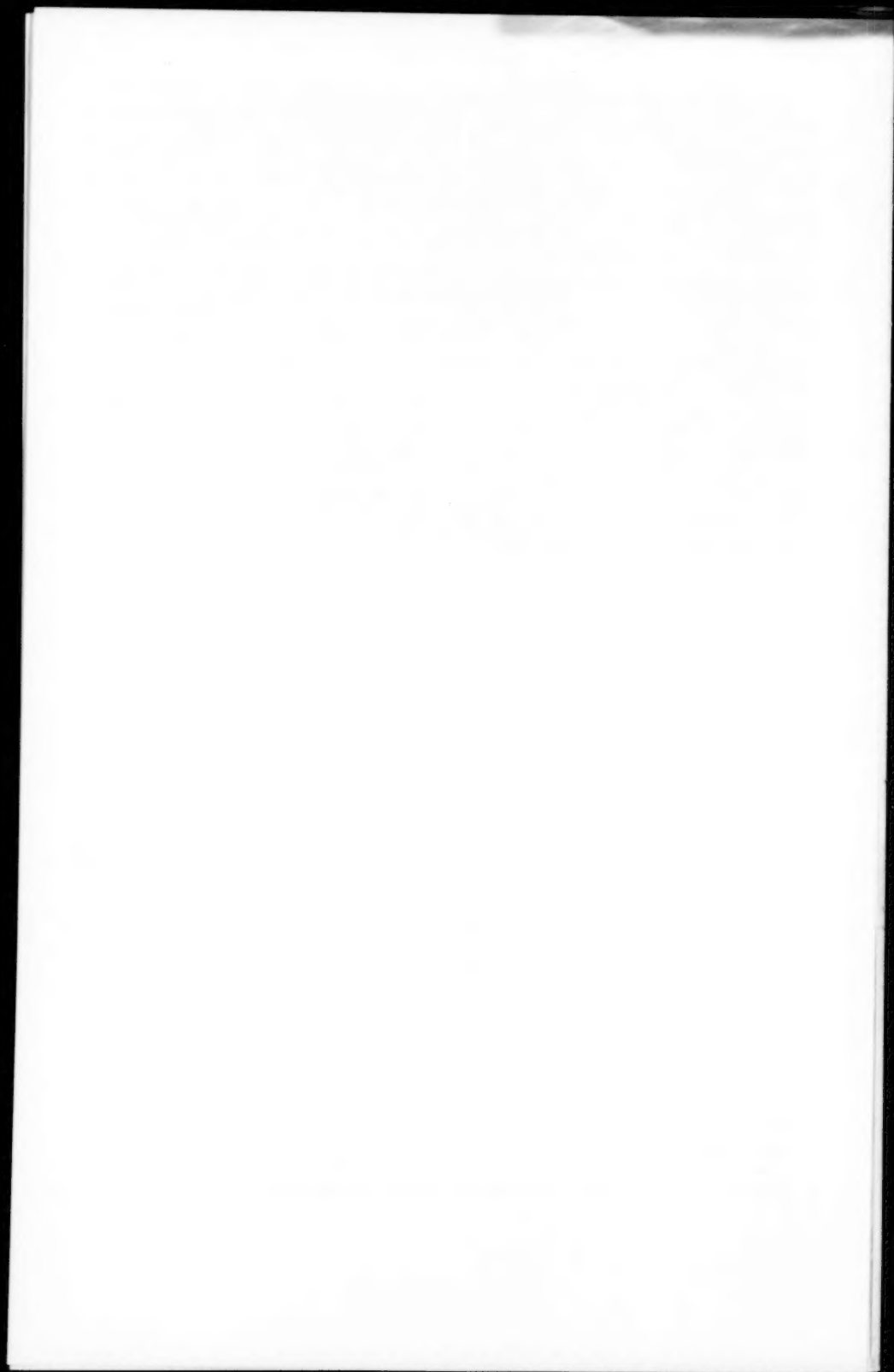
But if atomic power will be cheaper, it may theoretically allow industrial deconcentration. But such a trend will be restricted by the fact that nuclear powered industries will require railroads, buildings and other non-nuclear facilities that are already available in present industrial areas. In other words, atomic energy will not move industry away from its present habitat, although it may cause further dispersion within an already built-up metropolitan industrial area. An area that now has high power costs but other advantages may get more industries with cheaper atomic power.

Furthermore, it must be realized that power is not the deciding factor in the location of industry these days. Only in the electroprocess group of industries is power of dominant cost importance. The proportion that fuel and purchased energy is to value added by manufacture in the United States has never been higher than in 1907 when it was 9 per cent. By 1947, this ratio had been reduced to 4.5 per cent. The general decline in power costs during the 20th century did not bring with it great direct savings in production outlays and this cannot be counted on in the future. In short, atomic power will not revolutionize industry.

While it is true that both the technical knowledge and fissionable material necessary to operate a nuclear generating plant are theoretically transportable anywhere in the world, the same is not true of value systems and culture. Atomic power cannot be developed out of the context of its indigenous economic organization. Atomic power can be best used within the cultures that invented and developed it. Therefore, atomic power may even have the effect of concentrating industry even more than at present because it can be developed best within a presently successful, modern industrial pattern. This may intensify our present urban-industrial problems. Conversely, there is little chance that it will make over underdeveloped areas such as the near East, India and China.

In summary, there is no real prospect that atomic power will disperse people uniformly, that new atomic cities will grow up out of wastelands except when subsidized by the national government for military purposes, that underdeveloped areas and nations will be changed overnight, or that industry will seek generally new locations. Rather, industry will remain where it is now; there will be further growth of metropolitan areas, and further extension into the suburbs. Any dispersion of industry and people will come within the larger metropolitan area for the sake of more safety, less vulnerability and more elbow room for living and working. Tracy B. Augur, in a paper recently given before the American Institute of Planners, believes that cities of a half a million can be so rearranged industrially that the economy will be strengthened. The urban area can be divided into groups of semi-independent communities clustered around an urban center. Thus the region will be less vulnerable to attack and a higher degree of efficiency and better working conditions will result.

Planning our metropolitan government organization for the advent of atomic power in peace is impractical if we do not take into consideration the dangers of atomic attack in war. The public is moved by the threat of danger rather than by visions of a better city for the future. But practically the same things must be done to prepare for the atomic age in war as in peace. And remarkably, what has to be done to get ready for the atomic age either in war or in peace has to be done anyway if our cities are to be preserved from dry rot. The atomic age accentuates the need for municipal progress already on its way, just as the advent of atomic energy is a further step in the production of power. We cannot understand the implications of atomic power unless we realize that it is nothing alien to western civilization. It is but the last in point of time, and perhaps the most awesome, of our insatiable quest for power and of our never-ending explorations into the unknown. As such, it is our creature; we are not its slave. We have brought it into the world, we can control it. That is, we can if we work as hard and use as much ingenuity to control it as we have in making it. But if we make too many mistakes, there are those who can see nothing but destruction ahead of us, and we may end our civilized life. But if we can handle this new force, we can achieve even more of the good life than was ever possible before. Atomic power, therefore, is a real challenge. It may re-make the pattern of our local government in ways that we cannot visualize at this time.



## PROCEEDINGS PAPERS

The technical papers published in the past year are identified by number below. Technical-division sponsorship is indicated by an abbreviation at the end of each Paper Number, the symbols referring to: Air Transport (AT), City Planning (CP), Construction (CO), Engineering Mechanics (EM), Highway (HW), Hydraulics (HY), Irrigation and Drainage (IR), Power (PO), Sanitary Engineering (SA), Soil Mechanics and Foundations (SM), Structural (ST), Surveying and Mapping (SU), and Waterways (WW) divisions. Papers sponsored by the Board of Direction are identified by the symbols (BD). For titles and order coupons, refer to the appropriate issue of "Civil Engineering" or write for a cumulative price list.

### VOLUME 80 (1954)

NOVEMBER: 534(HY), 535(HY), 536(HY), 537(HY), 538(HY)<sup>C</sup>, 539(ST), 540(ST), 541(ST), 542(ST), 543(ST), 544(ST), 545(SA), 546(SA), 547(SA), 548(SM), 549(SM), 550(SM), 551(SM), 552(SA), 553(SM)<sup>C</sup>, 554(SA), 555(SA), 556(SA), 557(SA).

DECEMBER: 558(ST), 559(ST), 560(ST), 561(ST), 562(ST), 563(ST)<sup>C</sup>, 564(HY), 565(HY), 566(HY), 567(HY), 568(HY)<sup>C</sup>, 569(SM), 570(SM), 571(SM), 572(SM)<sup>C</sup>, 573(SM)<sup>C</sup>, 574(SU), 575(SU), 576(SU), 577(SU), 578(HY), 579(ST), 580(SU), 581(SU), 582(BD).

### VOLUME 81 (1955)

JANUARY: 583(ST), 584(ST), 585(ST), 586(ST), 587(ST), 588(ST), 589(ST)<sup>C</sup>, 590(SA), 591(SA), 592(SA), 593(SA), 594(SA), 595(SA)<sup>C</sup>, 596(HW), 597(HW), 598(HW)<sup>C</sup>, 599(CP), 600(CP), 601(CP), 602(CP), 603(CP), 604(EM), 605(EM), 606(EM)<sup>C</sup>, 607(EM).

FEBRUARY: 608(WW), 609(WW), 610(WW), 611(WW), 612(WW), 613(WW), 614(WW), 615(WW), 616(WW), 617(IR), 618(IR), 619(IR), 620(IR), 621(IR)<sup>C</sup>, 622(IR), 623(IR), 624(HY)<sup>C</sup>, 625(HY), 626(HY), 627(HY), 628(HY), 629(HY), 630(HY), 631(HY), 632(CO), 633(CO).

MARCH: 634(PO), 635(PO), 636(PO), 637(PO), 638(PO), 639(PO), 640(PO), 641(PO)<sup>C</sup>, 642(SA), 643(SA), 644(SA), 645(SA), 646(SA), 647(SA)<sup>C</sup>, 648(ST), 649(ST), 650(ST), 651(ST), 652(ST), 653(ST), 654(ST)<sup>C</sup>, 655(SA), 656(SM)<sup>C</sup>, 657(SM)<sup>C</sup>, 658(SM)<sup>C</sup>.

APRIL: 659(ST), 660(ST), 661(ST)<sup>C</sup>, 662(ST), 663(ST), 664(ST)<sup>C</sup>, 665(HY)<sup>C</sup>, 666(HY), 667(HY), 668(HY), 669(HY), 670(EM), 671(EM), 672(EM), 673(EM), 674(EM), 675(EM), 676(EM), 677(EM), 678(HY).

MAY: 679(ST), 680(ST), 681(ST), 682(ST)<sup>C</sup>, 683(ST), 684(ST), 685(SA), 686(SA), 687(SA), 688(SA), 689(SA)<sup>C</sup>, 690(EM), 691(EM), 692(EM), 693(EM), 694(EM), 695(EM), 696(PO), 697(PO), 698(SA), 699(PO)<sup>C</sup>, 700(PO), 701(ST)<sup>C</sup>.

JUNE: 702(HW), 703(HW), 704(HW)<sup>C</sup>, 705(IR), 706(IR), 707(IR), 708(IR), 709(HY)<sup>C</sup>, 710(CP), 711(CP), 712(CP), 713(CP)<sup>C</sup>, 714(HY), 715(HY), 716(HY), 717(HY), 718(SM)<sup>C</sup>, 719(HY)<sup>C</sup>, 720(AT), 721(AT), 722(SU), 723(WW), 724(WW), 725(WW), 726(WW)<sup>C</sup>, 727(WW), 728(IR), 729(IR), 730(SU)<sup>C</sup>, 731(SU).

JULY: 732(ST), 733(ST), 734(ST), 735(ST), 736(ST), 737(PO), 738(PO), 739(PO), 740(PO), 741(PO), 742(PO), 743(HY), 744(HY), 745(HY), 746(HY), 747(HY), 748(HY)<sup>C</sup>, 749(SA), 750(SA), 751(SA), 752(SA)<sup>C</sup>, 753(SM), 754(SM), 755(SM), 756(SM), 757(SM), 758(CO)<sup>C</sup>, 759(SM)<sup>C</sup>, 760(WW)<sup>C</sup>.

AUGUST: 761(BD), 762(ST), 763(ST), 764(ST), 765(ST)<sup>C</sup>, 766(CP), 767(CP), 768(CP), 769(CP), 770(CP), 771(EM), 772(EM), 773(SA), 774(EM), 775(EM), 776(EM)<sup>C</sup>, 777(AT), 778(AT), 779(SA), 780(SA), 781(SA), 782(SA)<sup>C</sup>, 783(HW), 784(HW), 785(CP), 786(ST).

SEPTEMBER: 787(PO), 788(IR), 789(HY), 790(HY), 791(HY), 792(HY), 793(HY), 794(HY)<sup>C</sup>, 795(EM), 796(EM), 797(EM), 798(EM), 799(EM)<sup>C</sup>, 800(WW), 801(WW), 802(WW), 803(WW), 804(WW), 805(WW), 806(HY), 807(PO)<sup>C</sup>, 808(IR)<sup>C</sup>.

OCTOBER: 809(ST), 810(HW)<sup>C</sup>, 811(ST), 812(ST)<sup>C</sup>, 813(ST)<sup>C</sup>, 814(EM), 815(EM), 816(EM), 817(EM), 818(EM), 819(EM)<sup>C</sup>, 820(SA), 821(SA), 822(SA)<sup>C</sup>, 823(HW), 824(HW).

NOVEMBER: 825(ST), 826(HY), 827(ST), 828(ST), 829(ST), 830(ST), 831(ST)<sup>C</sup>, 832(CP), 833(CP), 834(CP), 835(CP)<sup>C</sup>, 836(HY), 837(HY), 838(HY), 839(HY), 840(HY), 841(HY)<sup>C</sup>.

c. Discussion of several papers, grouped by Divisions.

# AMERICAN SOCIETY OF CIVIL ENGINEERS

## OFFICERS FOR 1956

### PRESIDENT

ENOCH RAY NEEDLES

### VICE-PRESIDENTS

*Term expires October, 1956:*

FRANK L. WEAVER

LOUIS R. HOWSON

*Term expires October, 1957:*

FRANK A. MARSTON

GLENN W. HOLCOMB

### DIRECTORS

*Term expires October, 1956:*

WILLIAM S. LaLONDE, JR.

OLIVER W. HARTWELL

THOMAS C. SHEDD

SAMUEL B. MORRIS

ERNEST W. CARLTON

RAYMOND F. DAWSON

*Term expires October, 1957:*

JEWELL M. GARRELS

FREDERICK H. PAULSON

GEORGE S. RICHARDSON

DON M. CORBETT

GRAHAM P. WILLOUGHBY

LAWRENCE A. ELSENER

*Term expires October, 1958*

JOHN P. RILEY

CAREY H. BROWN

MASON C. PRICHARD

ROBERT H. SHERLOCK

R. ROBINSON ROWE

LOUIS E. RYDELL

CLARENCE L. ECKEL

### PAST-PRESIDENTS

*Members of the Board*

DANIEL V. TERRELL

WILLIAM R. GLIDDEN

---

### EXECUTIVE SECRETARY

WILLIAM H. WISELY

### TREASURER

CHARLES E. TROUT

### ASSISTANT SECRETARY

E. L. CHANDLER

### ASSISTANT TREASURER

CARLTON S. PROCTOR

---

## PROCEEDINGS OF THE SOCIETY

HAROLD T. LARSEN

*Manager of Technical Publications*

DEFOREST A. MATTESON, JR.

*Editor of Technical Publications*

PAUL A. PARISI

*Assoc. Editor of Technical Publications*

---

### COMMITTEE ON PUBLICATIONS

SAMUEL B. MORRIS, *Chairman*

JEWELL M. GARRELS, *Vice-Chairman*

ERNEST W. CARLTON

MASON C. PRICHARD

R. ROBINSON ROWE

LOUIS E. RYDELL